

SOIL TESTING

What is a Soil Test?

A **soil test** is a process by which elements (phosphorus, potassium, calcium, magnesium, sodium, sulfur, manganese, copper and zinc) are chemically removed from the soil and measured for their "plant available" content within the sample. The quantity of available nutrients in the sample determines the amount of fertilizer that is recommended. A soil test also measures soil pH, humic matter and exchangeable acidity. These analyses indicate whether lime is needed and, if so, how much to apply.

Why Do You Need A Soil Test?

Encourages plant growth by providing the best lime and fertilizer recommendations.

When growers guess about the need for lime or fertilizers, too little or too much is likely to be applied. By using a soil test report, the grower does not need to guess.

For Example: When applying too much lime, soil pH may rise above the needed level, which causes nutrients such as iron, manganese, boron, copper and zinc to become less available to plants. It is also common to see homeowners purchase one bag of lime when they purchase one bag of fertilizer. Based on an average lawn size of 5000 square feet, one bag of fertilizer may be enough. Applying one bag of lime over 5000 square feet, however, will have little effect on soil pH.

Diagnoses whether there is too little or too much of a nutrient.

Promotes environmental quality.

When gardeners apply only as much fertilizer as is necessary, nutrient runoff into surface or ground water is minimized and natural resources are conserved.

Saves money that might otherwise be spent on unneeded lime and fertilizer.

For example, growers of flue-cured tobacco often routinely apply phosphorus. In areas where soil levels are high in phosphorus, a soil test could save these farmers up to \$60 per acre.

Taking a Good Sample

A soil sample must be taken at the right time and in the right way. The tools used, the area sampled, the depth and the correct mix of the sample, the information provided, and packaging all influence quality of the sample.

Time it right.

Take a soil sample a few months before starting any new landscaping—whether your laying sod, starting a vegetable garden, putting in a flower bed, or planting perennials. If the soil test report recommends lime, you will have enough time to apply it and have it adjust the soil pH before you plant.

Sample established areas—lawns, trees, shrubbery, and other perennials—once every three or four years. You can sample at any time of year; however, mid-August through mid-September is an ideal time to take samples for cool-season grasses, such as fescue, bluegrass, and ryegrass. By sampling at this time, you can be ready to apply lime in the fall.

For areas recently limed or fertilized, delay sampling at least six to eight weeks.

Use clean sampling equipment.

Use a soil probe, spade, hand garden trowel, or shovel to collect samples. Do not use brass, bronze, or galvanized tools because they will contaminate samples with copper and/or zinc.

Mix samples in a clean, plastic bucket. If the bucket has been used to hold fertilizer or other chemicals, wash it thoroughly before using it for soil samples.

Sample each unique area separately.

Each sample should represent only one soil type or area—for example, a lawn, vegetable garden or perennial landscaped area (Figure 1). For each unique area, take at least six to eight subsamples and combine them to make one sample. If one area of your yard seems healthy and another has bare or yellow areas, sample healthy and unhealthy areas separately even if both are lawn grasses or flower gardens, etc.

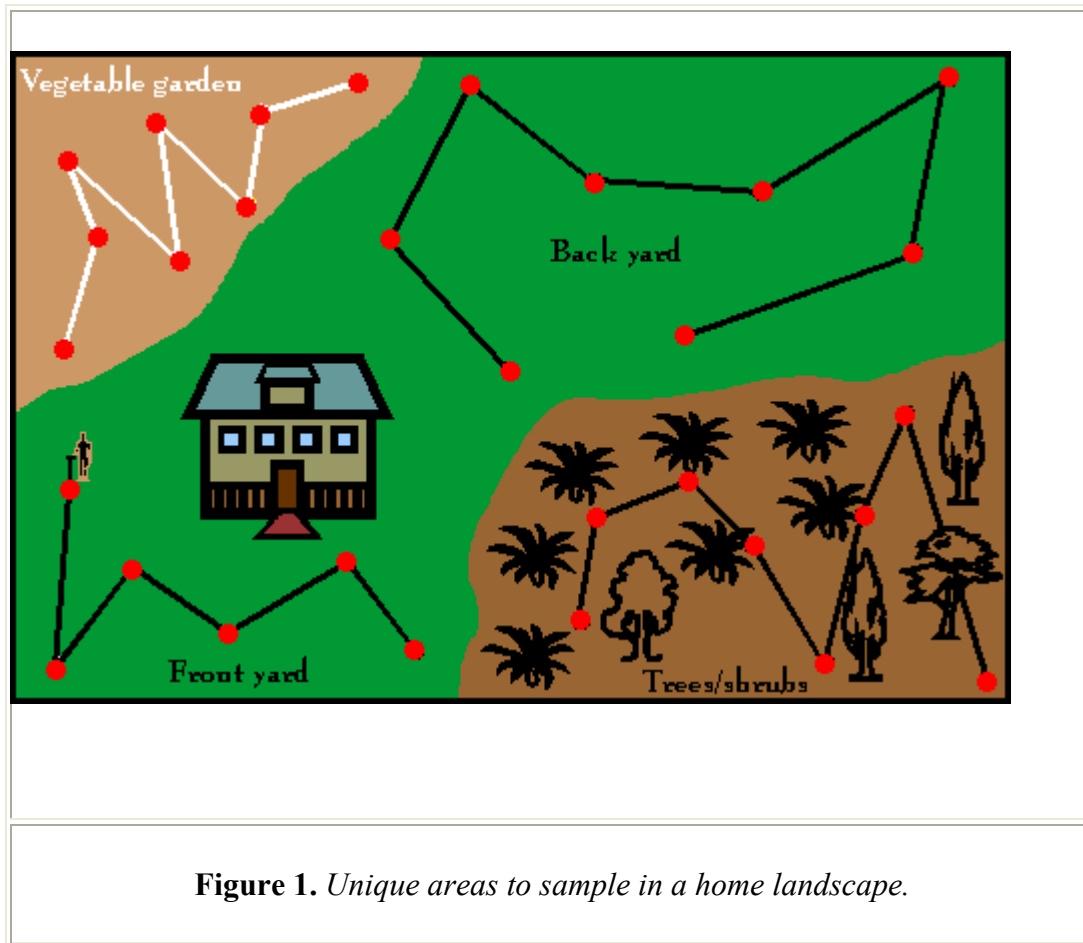


Figure 1. *Unique areas to sample in a home landscape.*

Take a soil core to the appropriate depth.

For lawns, sample to a depth of four inches, excluding any turf thatch.

For vegetable and flower gardens, sample to the depth that you plan to mix in lime or fertilizer, usually four to six inches.

For shrubbery, remove any mulch or surface debris, then sample to a depth of four to six inches around the base of plants. Avoid zones where lime or fertilizer have been recently applied.

Mix sample cores well.

Place all the subsamples for one unique area in a plastic bucket and mix thoroughly. Use the mixture in the bucket to fill a soil sample box about two-thirds full. Look for the fill line on the box.

Fill out an information sheet and label the sample box completely.

Get your sample boxes and information sheets from Cooperative Extension offices, agribusinesses, regional agronomists, or the Agronomic Division laboratory. Use permanent ink or pencil to fill out forms and label boxes.

If you just want routine lime and fertilizer recommendations, then fill out a Soil Sample Information Sheet (form AD1) and send it with your samples.

If you suspect existing nutritional problems and want the problems diagnosed, complete a Diagnostic Soil Sample Information Sheet (form AD2) instead.

Give each sample a unique identifier of up to five letters and/or numbers. Put this identifier on both the information sheet and the sample box. Choose an identifier that will help you remember the area it corresponds to, such as FYARD, BYARD, ROSES, or GRASS.

Be sure to list the existing plants and/or the plants you are planning to grow. You must include the crop code(s) in order to receive lime and fertilizer recommendations. Codes are listed on the back of the information sheet. Code 024 applies to all vegetable garden crops and 026 to all lawn grasses except centipedegrass, which is coded as 022.

Package the sample appropriately.

Put the soil mixture in the sample box. Do not tape the box or put soil in a plastic bag. If you are sending several sample boxes through the mail, pack them carefully in a sturdy container.

Receiving the Soil Test Report

Soil samples are usually analyzed within one week of the time they are received. However, from late fall through early spring, processing may take several weeks due to the heavy sample influx from farmers at this time.

When testing is complete, a report is mailed to the homeowner and a copy is immediately posted on the internet at <http://agronomy.agr.state.nc.us/>

A cover sheet and a crop-specific note are sent with the report. The cover sheet explains the technical terms and index values. The note provides extra details on fertilizer application schedules and rates for specific kinds of plants.

Information about soil tests and their interpretation is also available on the internet at <http://www.agr.state.nc.us/agronomi/sthome.htm>

Consult an agricultural advisor for more help on sampling, interpreting soil test results, and understanding how to implement them.